WE CLAIM:

1. A fixture adapted to install and remove a liner in an operating heated vertically extending semiconductor furnace, comprising:

a first ring;

a second ring coupled to the first ring and adapted to support the liner when elevated into the operating furnace, and when the liner is removed from the furnace, the second ring having structure adapted to rotate the second ring between a locked position when the liner is elevated into the operating furnace and an unlocked position when the liner is lowered from the operating furnace; and

a low-friction member interfaced between the first ring and the second ring facilitating the rotation of the second ring with respect to the first ring when the second ring is both heated proximate the furnace and when lowered from the furnace.

2. The fixture as specified in Claim 1 wherein the first ring is an outer ring, and the second ring is an inner ring.

3. The fixture as specified in Claim 1 wherein the inner ring at least partially resides in the outer ring.

4. The fixture as specified in Claim 1 further comprising an elevator adapted to support the fixture and elevate the liner into the operating furnace, and lower the liner from the operating furnace.

5. The fixture as specified in Claim 4 wherein the second ring further comprises at least one radially extending handle adapted to facilitate rotation of the second ring with respect to the first ring along the low-friction member.

6. The fixture as specified in Claim 5 wherein the handles have at least two securing points coupling the handles to the second ring, the two securing points being separated a predetermined arcuate distance.

7. The fixture as specified in Claim 6 wherein the handles each have a lever point radially separated from the second ring along an axis extending between the two securing points to form a "T" relationship relative to the two securing points.

8. The fixture as specified in Claim 7 wherein the two securing points are separated an arcuate distance of at least 14 degrees.

9. The fixture as specified in Claim 1 wherein the low-friction member has a flanged rim extending over the first ring.

10. The fixture as specified in Claim 4 wherein the elevator is adapted to lower the liner from the heated operating furnace at a rate below a predetermined maximum rate to control the rate of temperature change of the hot liner when removed from the heated furnace.

11. The fixture as specified in Claim 4 wherein the elevator is adapted to elevate the liner into the heated operating furnace at a rate below a predetermined maximum rate to control the rate of temperature change of the liner when inserted into the heated furnace.

12. The fixture as specified in Claim 10 wherein the predetermined maximum rate is 50mm/min.

13. The fixture as specified in Claim 11 wherein the predetermined maximum rate is 50mm/min.

14. A method of performing a liner change from an operating heated semiconductor furnace, comprising:

removing a heated liner from the operating heated furnace with a fixture; and

inserting a replacement liner into the operating heated furnace.

15. The method as specified in Claim 14 wherein the furnace is a vertical-type furnace.

16. The method as specified in Claim 14 wherein the furnace is a vertical nitride furnace.

17. The method as specified in Claim 15 wherein the liner is removed at a rate below a first maximum threshold rate to control a rate of temperature decrease of the liner when removed from the operating furnace.

18. The method as specified in Claim 17 wherein the first maximum threshold rate is 50mm/min.

19. The method as specified in Claim 15 wherein the furnace is operating at a temperature of at least 500 °C.

20. The method as specified in Claim 15 wherein the replacement liner is inserted into the furnace at a rate below a second maximum threshold rate to control a rate of temperature increase of the liner when inserted into the operating furnace.

21. The method as specified in Claim 20 wherein the second maximum threshold rate is 50 mm/min.

22. The method as specified in Claim 14 wherein the method is performed using a fixture comprising:

a first ring;

a second ring coupled to the first ring and adapted to support the liner when elevated into the operating furnace, and when the liner is removed from the furnace, the second ring having structure adapted to rotate the second ring between a locked position when the liner is elevated into the operating furnace and an unlocked position when the liner is lowered from the operating furnace; and

a low-friction member interfaced between the first ring and the second ring facilitating the rotation of the second ring with respect to the first ring when the second ring is both heated proximate the furnace and when lowered from the furnace.

23. The fixture as specified in Claim 22 wherein the first ring is an outer ring, and the second ring is an inner ring.

24. The fixture as specified in Claim 23 wherein the inner ring at least partially resides in the outer ring.

25. The method as specified in Claim 22 further comprising the step of using an elevator adapted to support the first ring and elevate the liner into the operating furnace, and lower the liner from the operating furnace.

26. The method as specified in Claim 25 wherein the second ring further comprises at least one radially extending handle adapted to facilitate rotation of the second ring with respect to the first ring along the low-friction member.

27. The method as specified in Claim 26 wherein the handles have at least two securing points coupling the handles to the second ring, the two securing points being separated a predetermined arcuate distance.

28. The method as specified in Claim 27 wherein the handles each have a lever point radially separated from the second ring along an axis extending between the two securing points to form a "T" relationship relative to the two securing points.

29. The method as specified in Claim 28 wherein the two securing points are separated an arcuate distance of at least 14 degrees.

30. The method as specified in Claim 22 wherein the low-friction member has a flanged rim extending over the first ring.

31. The method as specified in Claim 25 wherein the elevator lowers the liner from the heated operating furnace at a rate below a predetermined maximum rate to control the rate of temperature change of the hot liner when removed from the heated furnace.

32. The method as specified in Claim 25 wherein the elevator elevates the liner into the heated operating furnace at a rate below a predetermined maximum rate to control the rate of temperature change of the liner when inserted into the heated furnace.

33. The method as specified in Claim 25 wherein the predetermined maximum rate is 50mm/min.

34. The method as specified in Claim 25 wherein the predetermined maximum rate is 50mm/min.